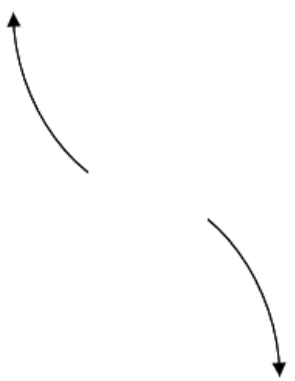
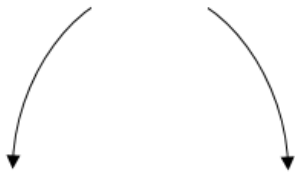
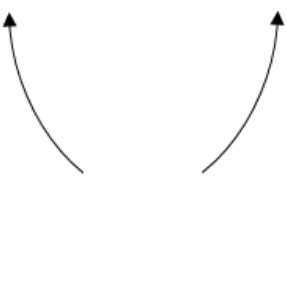
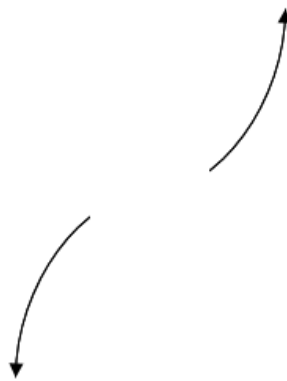


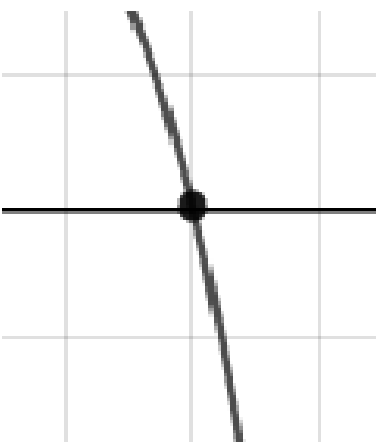
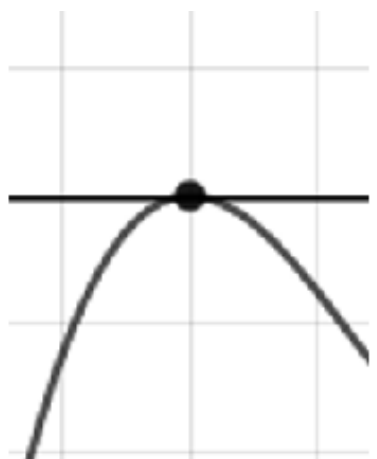
1. Describe the end behavior of the polynomial below.

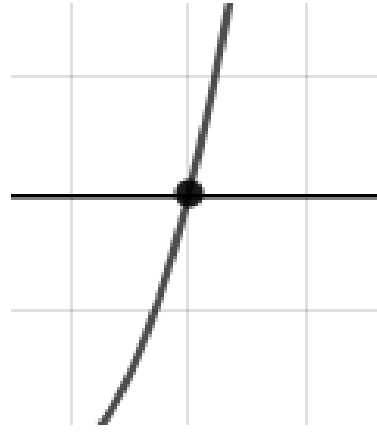
$$f(x) = -3(x + 5)^4(x - 5)^7(x - 7)^4(x + 7)^6$$

- A. 
- B. 
- C. 
- D. 
- E. None of the above.

2. Describe the zero behavior of the zero  $x = 3$  of the polynomial below.

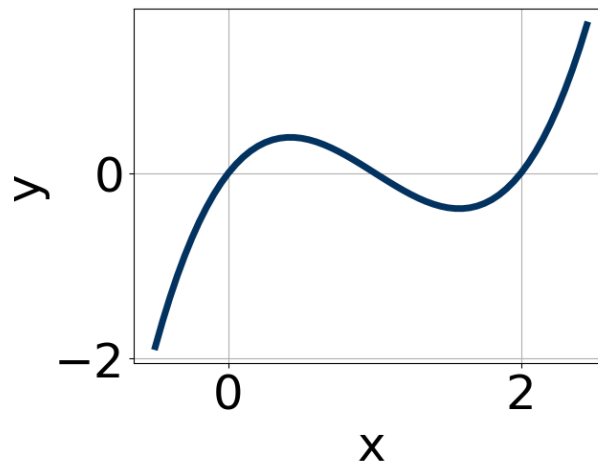
$$f(x) = 6(x - 3)^8(x + 3)^{13}(x - 4)^9(x + 4)^{12}$$

- A. 
- B. 



E. None of the above.

3. Which of the following equations *could* be of the graph presented below?



- A.  $4x^7(x-2)^{10}(x-1)^5$
- B.  $-8x^9(x-2)^6(x-1)^5$
- C.  $18x^7(x-2)^7(x-1)^5$
- D.  $7x^{10}(x-2)^8(x-1)^{11}$
- E.  $-12x^9(x-2)^5(x-1)^5$

4. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in

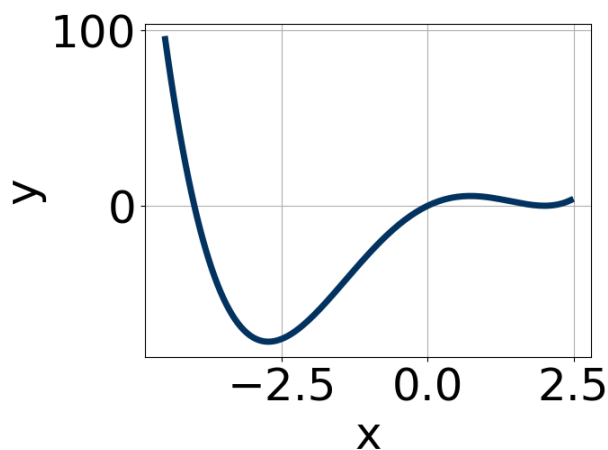
the form  $x^3 + bx^2 + cx + d$ .

$$4 + 5i \text{ and } 2$$

- A.  $b \in [7, 16], c \in [56, 57.3]$ , and  $d \in [81, 86.3]$
- B.  $b \in [0, 2], c \in [-6.8, -1.8]$ , and  $d \in [3.8, 8.5]$
- C.  $b \in [0, 2], c \in [-8.8, -6.5]$ , and  $d \in [8.4, 13.1]$
- D.  $b \in [-13, -4], c \in [56, 57.3]$ , and  $d \in [-84.9, -79.5]$
- E. None of the above.

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5. Which of the following equations *could* be of the graph presented below?

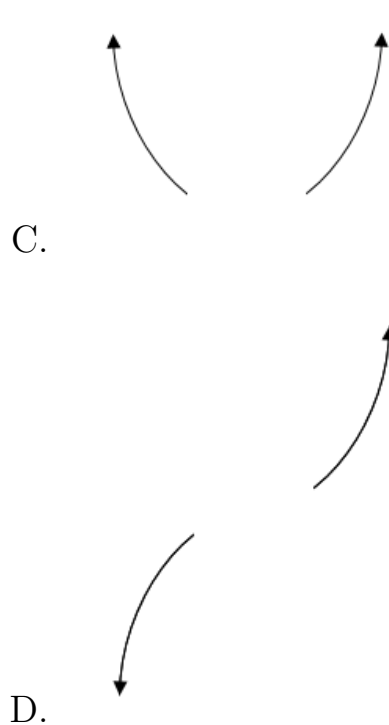
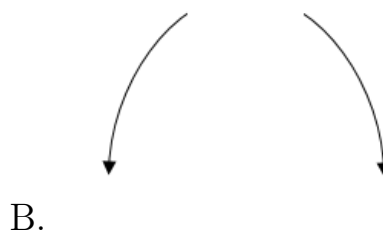
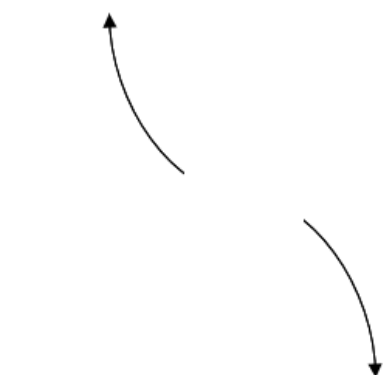


- A.  $-18x^9(x - 2)^{10}(x + 4)^8$
- B.  $19x^6(x - 2)^9(x + 4)^9$
- C.  $-14x^9(x - 2)^6(x + 4)^5$
- D.  $11x^9(x - 2)^8(x + 4)^7$
- E.  $19x^6(x - 2)^{10}(x + 4)^9$

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6. Describe the end behavior of the polynomial below.

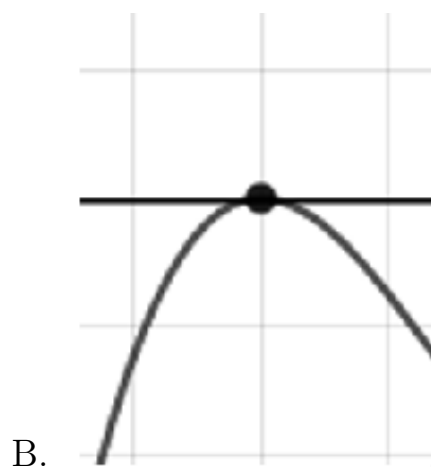
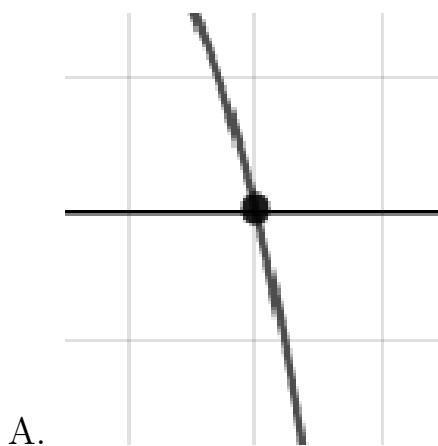
$$f(x) = -3(x + 2)^3(x - 2)^8(x + 6)^5(x - 6)^5$$



E. None of the above.

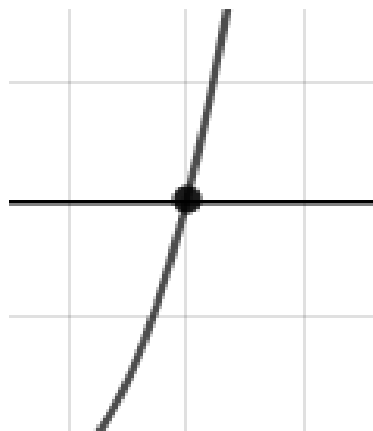
7. Describe the zero behavior of the zero  $x = 7$  of the polynomial below.

$$f(x) = 9(x + 8)^9(x - 8)^7(x - 7)^7(x + 7)^2$$





C.



D.

E. None of the above.

8. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form  $ax^3 + bx^2 + cx + d$ .

$$\frac{-1}{5}, \frac{-1}{4}, \text{ and } 6$$

- A.  $a \in [16, 21], b \in [107, 116], c \in [-55, -47],$  and  $d \in [-2, 13]$   
 B.  $a \in [16, 21], b \in [-137, -123], c \in [51, 61],$  and  $d \in [-9, -5]$   
 C.  $a \in [16, 21], b \in [-113, -106], c \in [-55, -47],$  and  $d \in [-2, 13]$   
 D.  $a \in [16, 21], b \in [-120, -116], c \in [-19, -4],$  and  $d \in [-2, 13]$   
 E.  $a \in [16, 21], b \in [-113, -106], c \in [-55, -47],$  and  $d \in [-9, -5]$

9. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form  $x^3 + bx^2 + cx + d$ .

$$-5 + 4i \text{ and } -2$$

- A.  $b \in [-14, -10], c \in [53, 67],$  and  $d \in [-88, -77]$   
 B.  $b \in [1, 6], c \in [-5, -1],$  and  $d \in [-8, 0]$   
 C.  $b \in [1, 6], c \in [7, 8],$  and  $d \in [9, 17]$

- D.  $b \in [9, 25]$ ,  $c \in [53, 67]$ , and  $d \in [82, 90]$
- E. None of the above.
- 

10. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form  $ax^3 + bx^2 + cx + d$ .

$$\frac{-5}{4}, \frac{-3}{4}, \text{ and } -5$$

- A.  $a \in [12, 18]$ ,  $b \in [44, 51]$ ,  $c \in [-145, -143]$ , and  $d \in [73, 83]$
- B.  $a \in [12, 18]$ ,  $b \in [104, 114]$ ,  $c \in [171, 181]$ , and  $d \in [-76, -74]$
- C.  $a \in [12, 18]$ ,  $b \in [72, 73]$ ,  $c \in [-60, -50]$ , and  $d \in [-76, -74]$
- D.  $a \in [12, 18]$ ,  $b \in [-114, -109]$ ,  $c \in [171, 181]$ , and  $d \in [-76, -74]$
- E.  $a \in [12, 18]$ ,  $b \in [104, 114]$ ,  $c \in [171, 181]$ , and  $d \in [73, 83]$
-